

What is claimed:

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1 1. A network apparatus, comprising:
2 a performance enhancing proxy which facilitates
3 communication between said network apparatus and other
4 network entities by performing at least one performance
5 enhancing function.

1 2. The network apparatus of claim 1, wherein said
2 network apparatus is connected to other network entities via
3 a first type of connection and other network entities via a
4 second type of connection.

1 3. The network apparatus of claim 2, wherein said
2 performance enhancing proxy establishes multiple connections
3 of the first type associated with different applications,
4 said performance enhancing proxy including,
5 a spoofing element, which spoofs some of the multiple
6 connections of the first type based on their associated
7 applications.

1 4. The network apparatus of claim 3, wherein said
2 spoofing element only spoofs connections of the first type
3 associated with at least one of applications with high
4 throughput and applications for which reduced startup
5 latency is desired.

1 5. The network apparatus of claim 3, wherein said
2 spoofing element assigns spoofing resources, including
3 buffer space and control blocks, to the spoofed connections.

1 6. The network apparatus of claim 3, wherein said
2 spoofing element spoofs connections using at least one
3 spoofing rule based on destination address, source address,
4 destination port number, source port number, options, a
5 differentiated services (DS) field or combinations thereof.

1 7. The network apparatus of claim 6, wherein said
2 spoofing element defines the at least one spoofing rule in a
3 spoofing profile.

1 8. The network apparatus of claim 2, wherein said
2 performance enhancing proxy establishes multiple connections
3 of the first type, said performance enhancing proxy
4 including,

5 a spoofing element, which spoofs acknowledgements
6 (ACKs).

1 9. The network apparatus of claim 2, wherein said
2 performance enhancing proxy establishes multiple connections
3 of the first type, said performance enhancing proxy
4 including,

5 a spoofing element, which spoofs a three-way handshake
6 between said network apparatus and another network entity.

1 10. The network apparatus of claim 2, wherein said
2 performance enhancing proxy establishes multiple connections
3 of the first type, said performance enhancing proxy
4 including,

5 a protocol element, which multiplexes multiple
6 connections of the first type onto a single connection of
7 the second type.

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1 11. The network apparatus of claim 2, wherein said
2 performance enhancing proxy establishes multiple connections
3 of the first type, said performance enhancing proxy
4 including,

5 a prioritization element, which prioritizes connections
6 of the first type to determine what priority level of the
7 connection of the second type, each of the connections of
8 the first type are assigned.

1 12. The network apparatus of claim 11, wherein said
2 prioritizing element prioritizes connections using at least
3 one prioritizing rule based on destination address, source
4 address, destination port number, source port number,
5 protocol, a differentiated services (DS) field, a type of
6 data contained within the connection or combinations
7 thereof.

1 13. The network apparatus of claim 12, wherein said
2 prioritizing element defines the at least one prioritizing
3 rule in a prioritizing profile.

1 14. The network apparatus of claim 2, wherein said
2 performance enhancing proxy establishes multiple connections
3 of the first type, said performance enhancing proxy
4 including,
5 a path selection element, which selects a path for data
6 associated with connections of the first type across
7 connections of the second type or connections of other
8 types.

1 15. The network apparatus of claim 14, wherein said
2 path selection element can select up to N paths ($N > 1$), where
3 the Nth path is selected only if the (N-1)th path fails.

1 16. The network apparatus of claim 15, wherein said
2 path selection element selects a path using at least one
3 path selection rule based on priority, a destination
4 address, source address, destination port number, source
5 port number, protocol, a differentiated services (DS) field
6 or combinations thereof.

1 17. The network apparatus of claim 16, wherein said
2 path selection element defines the at least one path
3 selection rule in a path selection profile.

1 18. The network apparatus of claim 2, wherein said
2 performance enhancing proxy establishes multiple connections
3 of the first type, said performance enhancing proxy
4 including,

5 a compression/encryption element, which compresses
6 and/or encrypts data associated with connections of the
7 first type for transmission across connections of the second
8 type.

1 19. The network apparatus of claim 2, wherein the
2 first connection uses a high layer protocol.

1 20. The network apparatus of claim 2, wherein the
2 first connection uses one of the Transmission Control
3 Protocol (TCP) and the User Datagram Protocol (UDP).

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1 21. The network apparatus of claim 2, wherein the
2 second connection is a backbone connection.

1 22. The network apparatus of claim 21, wherein the
2 backbone connection is via a wireless link.

1 23. The network apparatus of claim 22, wherein the
2 wireless link has high latency and high error rate.

1 24. The network apparatus of claim 22, wherein the
2 wireless link is a satellite link.

1 25. The network apparatus of claim 2, wherein said
2 network apparatus is a component of a network gateway.

1 26. The network apparatus of claim 2, wherein said
2 network apparatus is a component of a host.

1 27. The network apparatus of claim 2, wherein said
2 network apparatus is a component of a hub.

1 28. The network apparatus of claim 2, wherein said
2 network apparatus is a component of a VSAT.

1 29. The network apparatus of claim 2, wherein said
2 network apparatus is a component of a router.

1 30. A method, comprising:
2 facilitating communication between a network apparatus
3 and other network entities by performing at least one
4 performance enhancing function.

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1 31. The method of claim 30, wherein the network
2 apparatus is connected to other network entities via a first
3 type of connection and other network entities via a second
4 type of connection.

1 32. The method of claim 31, further comprising:
2 establishing multiple connections of the first type
3 associated with different applications; and
4 spoofing some of the multiple connections of the first
5 type based on their associated applications.

1 33. The method of claim 32, wherein said spoofing step
2 only spoofs connections of the first type associated with at
3 least one of applications with high throughput and
4 applications for which reduced startup latency is desired.

1 34. The method of claim 32, wherein said spoofing step
2 assigns spoofing resources, including buffer space and
3 control blocks, to the spoofed connections.

1 35. The method of claim 32, wherein said spoofing step
2 spoofs connections using at least one spoofing rule based on
3 destination address, source address, destination port
4 number, source port number, options, a differentiated
5 services (DS) field or combinations thereof.

1 36. The method of claim 35, wherein said spoofing step
2 defines the at least one spoofing rule in a spoofing
3 profile.

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1 37. The method of claim 31, further comprising:
2 establishing multiple connections of the first type;
3 and
4 spoofing acknowledgements (ACKs).

1 38. The method of claim 31, further comprising:
2 establishing multiple connections of the first type;
3 and
4 spoofing a three-way handshake between the network
5 apparatus and another network entity.

1 39. The method of claim 31, further comprising:
2 establishing multiple connections of the first type;
3 and
4 multiplexing multiple connections of the first type
5 onto a single connection of the second type.

1 40. The method of claim 31, further comprising:
2 establishing multiple connections of the first type;
3 and
4 prioritizing connections of the first type to determine
5 what priority level of the connection of the second type,
6 each of the connections of the first type are assigned.

1 41. The method of claim 40, wherein said prioritizing
2 step prioritizes connections using at least one priority
3 rule based on destination address, source address,
4 destination port number, source port number, protocol, a
5 differentiated services (DS) field, type of data contained
6 within the connection or combinations thereof.

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1 42. The network apparatus of claim 41, wherein said
2 prioritizing element defines the at least one prioritizing
3 rule in a prioritizing profile.

1 43. The method of claim 31, further comprising:
2 establishing multiple connections of the first type;
3 and
4 selecting a path for data associated with connections
5 of the first type across connections of the second type or
6 connections of other types.

1 44. The method of claim 43, wherein said selection
2 step selects up to N paths ($N > 1$), where the Nth path is
3 selected only if the (N-1)th path fails.

1 45. The method of claim 44, wherein said selection
2 step selects a path using at least one path selection rule
3 based on priority, a destination address, source address,
4 destination port number, source port number, protocol, a
5 differentiated services (DS) field or combinations thereof.

1 46. The method of claim 45, wherein said selection
2 step defines the at least one path selection rule in a path
3 selection profile.

1 47. The method of claim 31, further comprising:
2 establishing multiple connections of the first type;
3 and
4 compressing and/or encrypting data associated with
5 connections of the first type for transmission across
6 connections of the second type.

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1 48. The method of claim 31, wherein the first
2 connection uses a high layer protocol.

1 49. The method of claim 31, wherein the first
2 connection uses one of the Transmission Control Protocol
3 (TCP) and the User Datagram Protocol (UDP).

1 50. The method of claim 31, wherein the second
2 connection is a backbone connection.

1 51. The method of claim 50, wherein the backbone
2 connection is via a wireless link.

1 52. The method of claim 51, wherein the wireless link
2 has high latency and high error rate.

1 53. The method of claim 50, wherein the wireless link
2 is a satellite link.

1 54. The method of claim 31, wherein said method is
2 performed in a network gateway.

1 55. The method of claim 31, wherein said method is
2 performed in a host.

1 56. The method of claim 31, wherein said method is
2 performed in a hub.

1 57. The method of claim 31, wherein said method is
2 performed in a VSAT.

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1 58. The method of claim 31, wherein said method is
2 performed in a router.

1 59. The method of claim 31, wherein said method is
2 performed in a switch.

1 60. The network apparatus of claim 2, wherein said
2 network apparatus is a component of a switch.

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